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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet	1	of	4
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Complete if Known

Application Number	09/760,635
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Filing Date	01/16/2001
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First Named Inventor	Edmond, et al.
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Group Art Unit

Examiner Name

Attorney Docket Number	5000.137
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U.S. PATENT DOCUMENTS

Examiner Initials *	Cite No. ¹	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
SWC	1	5,173,751		Ota et al.	12-22-1992	
	2	5,247,533		Okazaki et al.	09-21-1993	
	3	5,338,944		Edmond et al.	08-16-1994	
	4	5,387,804		Suzuki et al.	02-07-1995	
	5	5,523,589		Edmond et al.	06-04-1996	
	6	5,585,648		Tischler	12-17-1996	
	7	5,592,501		Edmond et al.	01-07-1997	
	8	5,631,190		Negley	05-20-1997	
	9	5,661,074		Tischler	08-26-1997	
	10	5,739,554		Edmond et al.	04-14-1998	
	11	5,747,832		Nakamura et al.	05-05-1998	
	12	5,862,167		Sassa et al.	01-19-1999	
	13	5,874,747		Redwing et al.	02-23-1999	
	14	5,900,647		Inoguchi	05-04-1999	
	15	6,118,801		Ishikawa et al.	09-12-2000	
	16	5,987,048		Ishikawa et al.	11-16-1999	
	17	6,084,899		Shakuda	07-04-2000	
	18	5,751,752		Shakuda	05-12-1998	
	19	RE36747		Manabe et al	06-27-2000	
SWC	20	5,408,120		Manabe et al.	04-18-1995	

FOREIGN PATENT DOCUMENTS

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Date
Considered

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U.S. PATENT DOCUMENTS

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First Named Inventor	Edmond, et al.
Group Art Unit	
Examiner Name	
Attorney Docket Number	5000.137

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
SWC	28	KUBOTA, ET AL; "Preparation and properties of III-V nitride thin films"; J. Appl. Phys. 66(7); 1 October 1989; pp. 2984-2988	
	29	CHAN, ET AL.; "Metallization of GaN Thin Films Prepared by Ion Beam Assisted Molecular Beam Epitaxy"; Materials Research Society Symposium Proc. Vol. 339; 1994; pp. 223-227	
	30	LIN, ET AL.; "Low resistance ohmic contacts on wide band-gap GaN"; Appl. Phys. Lett. 64(8); 21 February 1994; pp. 1003-1005	
	31	WRIGHT, ET AL.; "First-principles calculations for zinc-blende AlInN alloys"; Appl. Phys. Lett. 66(25); 19 June 1995; pp. 3465-3467	
	32	SAKAI, ET AL; "GaN/GaN/GaN Double Heterostructure Light Emitting Diode Fabricated Using Plasma-Assisted Molecular Beam Epitaxy"; Jpn. Appl. Phys. Vol. 34; 1995; pp. 1429-1430	
	33	McINTOSH, ET AL; "Growth and characterization of AlInGaN quaternary alloys"; Appl. Phys. Lett. 68(1); 1 January 1996; pp. 40-42	
	34	MACK; "Characteristics of Indium-Gallium-Nitride Multiple-Quantum-Well Blue Laser Diodes Grown by MOCVD"; MRS Internet Journal of Nitride Semiconductor Research; Vol. 2, Article 41; 1997	
	35	MATSUOKA; "Calculation of unstable mixing region in wurtzite In _{1-x} Ga _x Al _y N"; Appl. Phys. Lett. 71(1); 7 July 1997, pp. 105-106	
	36	MONEMAR, ET AL; "Radiative recombination in In _{0.15} Ga _{0.85} N/GaN multiple quantum well structures"; MRS Internet Journal Nitride Semiconductor Research; 1999	
	37	KARIYA, ET AL; "Mosaic Structure of Ternary Al _{1-x} In _x N Films on GaN Grown by Metalorganic Vapor Phase Epitaxy"; Jpn. Appl. Phys. Vol. 38; 1999; pp. 984-986	
SWC	38	KARIYA, ET AL; "Structural characterization of Al _{1-x} In _x N lattice-matched to GaN"; Journal of Crystal Growth 209; 2000; pp. 419-423	

Examiner Signature

CRANE

Date Considered

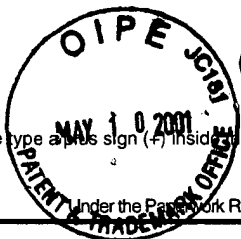
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Application Number	09/760,635
Filing Date	01/16/2001
First Named Inventor	Edmond, et al.
Group Art Unit	
Examiner Name	
Attorney Docket Number	5000.137

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
SWC	39	KARIYA, ET AL; "Structural Properties of Al 1-x In x N Ternary Alloys on GaN Grown by Metalorganic Vapor Phase Epitaxy"; Jpn. Appl. Phys., Vol. 37; 1998; pp. 697-699	
SWC	40	YAMAGUCHI, ET AL; "Anomalous features in the optical properties of Al 1-x In x N on GaN grown by metal organic vapor phase epitaxy"; Applied Physics Letters, Vol. 76(7); 14 February 2000; pp. 876-878	

Examiner Signature	CRANE	Date Considered	3/7/03
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Sheet	1	of	1
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Application Number	09/760635
Filing Date	January 16, 2001
First Named Inventor	Edmond et al
Group Art Unit	2811
Examiner Name	
Attorney Docket Number	5000.137

U.S. PATENT DOCUMENTS

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